Up To Date

NASA IV&V Program
Educator Resource Center Newsletter

January 2012

Inside this issue:

Engineers and Students Visit the ERC and Technology Park

Two First Robotics teams from Kanawha County along with their sponsors from the American Society of Mechanical Engineers visited NASA and other facilities at the I-79 Technology Park on January 26.

Dr. Tom Evans provided a tour of the WVU-NASA Robotics Center for the ASME group.

Beginning in the ERC with a welcome from Greg Blaney, director of NASA's Independent Verification and Validation Program, the guests then divided into two groups. Robotic teams explored the use of proportional mathematics and sensor-directed autonomous travel to program NXT robots in the student research lab as the remaining adults heard from engineers working in the park. Steve Racque presented information on the work IV&V does as the "Space" part of the National Aeronautics and Space Administration , while Eric Sorton, of the WV High Tech Consortium Foundation, presented the "Aeronautics" being done in the park.

The two groups rejoined to take tours of the Jon McBride software Testing and Research (JSTAR) lab. One of the many projects there is the use of simulation environments of places such as the International Space Station to help facilitate testing of ISS software. Also at JSTAR, WVU Senior Design Project Xbox Kinect is integrating Microsoft's Kinect with external devices and software application with voice and/or body movements to control spacecraft movement.

Next came a tour of the Electronic Warfare Associates—Government Systems Incorporation research lab which designs and produces a combat computer center that compiles all battlefield data into a virtual image of enemy combat organizations..

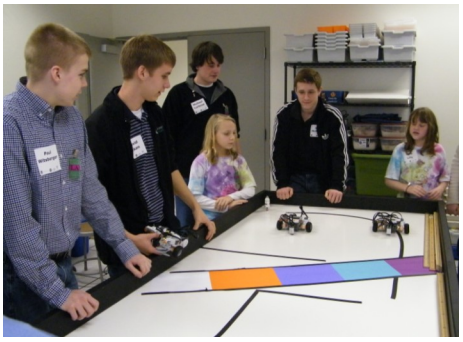
Justin Morris of JSTAR demonstrated the capabilities of the new computer lab.

David Richards, the principal engineer of EWA, led the tour.

Sherry Wall, also of WVHTC, showed the group the Super Lightweight Interchangeable Carrier (SLIC) and explained how it was built in WV before it served as the instrument platform for the repair of the Hubble Telescope. After several missions on the space shuttle it was returned to WV as an exhibit piece and can be seen here at the Robert Mollohan Research Center. It will be moved at a future date to the Smithsonian in Washington, D.C.

At the WVU-NASA Robotics Lab the group was able to see engineers testing movement of one of several robotic arms being used in researching the capture of orbiting satellites for refueling and repair purposes. Dr. Tom Evans explained the scope of the research as he led the tour.

FFL and FTC robotic teams testing their color sensor programs.



Finally, Darren Smith of the National Oceanic and Atmospheric Administration, conducted a tour of the world's 30th largest computer. This super computer will become available to weather and climate researchers both here in the United States and internationally. At a cost of thirty million for the computer itself and another thirty million in leasing of space and operating costs, NOAA has made a big commitment to WV. Smith explained one of the factors that played into deciding to locate the supercomputer in WV was the low cost of electricity here compared to many other states.

NOAA's new supercomputer—the 30th largest in the world—now in the I-79 Technology Park.

February Binocular / Telescope Highlights

Using a good set of binoculars or a small to medium sized telescope will reveal wonderful sights in the night sky during February.

Feb. 9: Between 8 and 9 pm **Mars** is visible as a bright red dot just to the left of **Moon**. Using medium to high power magnification **Uranus** will be visible as a tiny blue-green disk just a little south of Venus shining brilliantly just after dusk.

Feb. 22: Around 30 minutes after sunset **Mercury** will appear just above the horizon and left of a faint crescent moon . **Venus** will appear about three fist widths above and to the left of Mercury.

All Month just after dusk: **Jupiter** will start the month out high above **Venus** at dusk in the SW sky. The two planets become closer all month until they are barely a fist width's away from each other. Don't miss the chance to look up and see these planets shining so close!

Saturn doesn't appear in the sky at the first of the month until about 11:30 pm. As February goes on it appears earlier each night until by the end of the month it is appearing by 8:30 pm. **Saturn's rings** are more tilted from edge on during February and so are beautiful to see. For the next five months the tilt will continue to decrease as the rings approach being edge on.

The following three sites give great detail about the night sky:

http://www.nightskyinfo.com/

http://www.jodrellbank.manchester.ac.uk/astronomy/nightsky/

http://www.skyandtelescope.com/

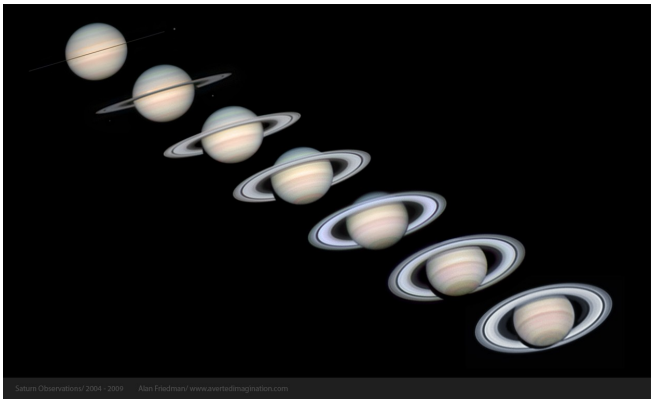
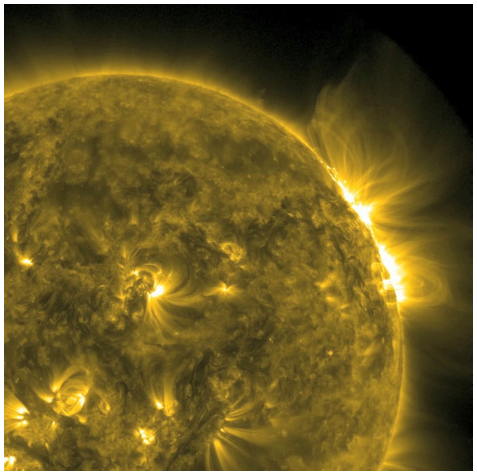


Photo credit: night-sky.com

Information: Sky and Telescope Magazine February 2010.

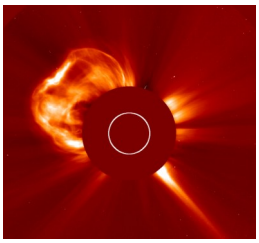
Solar Activity



This photo taken by the Solar Dynamics Observatory (SDO) in 171 angstrom shows sunspot 1402 erupting with an X1.8 class solar flare. Credit: NASA/SDO

The sun unleashed an X1.8 class flare that began at 1:12 PM ET on January 27, 2012 and peaked at 1:37. The flare immediately caused a strong radio blackout at low-latitudes, which was rated an R3 on NOAA's scale from R1-5. The blackout soon subsided to a minor R1 storm. Models from NASA's Goddard Space Weather Center predict that the CME is traveling at over 1500 miles per second. It does not initially appear to be Earth-directed, but Earth may get a glancing blow.

Initial movies from NASA's Solar Dynamics Observatory (SDO) look as though there was an eruption and coronal mass ejection (CME) associated with the event, and NOAA's GOES satellite also detected a solar energetic particle (SEP) event a half hour after the flare peak. How these CMEs and SEPs form and evolve, as well as their association with the flare event itself will be studied in the coming hours and days as more data and movies from NASA's SDO, STEREO and SOHO instruments become available.



SOHO captured this photo of a coronal mass ejection (CME) that blasted off the sun on January 27, 2012. Credit: SOHO/ESA&NASA

Space Weather Workshop Feb. 4

SPACE WEATHER REPORTING WITH IPADS, SATURDAY, FEB. 4, 10 AM - 3 PM

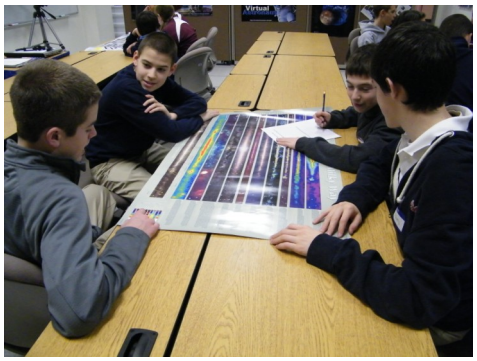
At this inaugural training, you will discover how your students can download images of the sun taken by NASA satellites only seconds before, how to use a variety of solar telescopes that permit safe viewing of sunspots and even coronal mass ejections, and how to capture, edit, and share student-created space weather reports online!

You will be trained by both NASA educational specialists and WVU Plasma Physicist Dr. Amy Keesee and will be certified to borrow the iPads, telescopes, and more. From the ERC's Equipment Loan program.

This workshop is almost full, so sign up today at:
http://www.zoomerang.com/Survey/WEB22EEYT84QVD

Fairmont Catholic Students Explore the Electromagnetic Spectrum

Above and Below: Following an Introduction to the EMS by Jake Cox of NASA IV&V, students used posters of the Electromagnetic Spectrum and the Multi-wavelength Milky Way to begin their exploration of the various electromagnetic waves that surround them.



Center Top: Viewing the sun with a Personal Solar Telescope.

Bottom: Using a variety of emitters and detectors students explore what materials will stop the transmission of different wavelengths in the spectrum.

Above: Fairmont Catholic group photo

Below: Students viewing the emission spectrum of helium gas with hand held spectroscopes. By capturing light through spectroscopes on space satellites and telescopes the composition of the universe beyond earth can be studied.

Upcoming ERC Workshops and Events

Feb. 4 Space Weather.....10 AM-3 PM

Feb. 7 Student EMS (filled)

Feb. 11 Glass and Mirrors Webinar .....10:30 AM—12:30 PM

Feb. 16 NASA Games.....4 PM -7 PM

Feb. 20 Virtual Worlds .....10 AM-4 PM

Feb. 21 Student Living and Working in Space (filled)

Mar. 3 Life on Earth and Elsewhere? Webinar .....10:30 AM-12:30 PM

Mar. 6 Student Planetary Geology (filled)

Mar. 7 Lunar/Meteorite Certification.....5 PM—8 PM

Mar. 10 Robots and Ratios .....10 AM—4 PM

March 20 Student Rocketry (filled)

Mar. 21 Sun-Earth Day Celebration.....time TBA

Mar. 24 Robotics Explorations Webinar....10-11:30 AM

Mar. 24 Robotics Explorations and WeDo Workshop .....1 PM—5 PM

Apr. 10 Student Electromagnetic Spectrum ..call to schedule with Amy Phillips 304-367-8379

Apr. 11 Intro. to GPS.....5 PM-8 PM

Apr. 17 Basic Rocketry.....4 PM-7 PM

Apr. 21 Hydrogen and Solar Energy.....10 AM-4 PM

Apr. 21 Bring Hubble Space Telescope Discoveries to Your Classroom Webinar .....11:00 AM-12:30 PM

Apr. 24 Student Model Rocketry (filled)

The ERC Staff

Todd Ensign ...Program Manager

todd.ensign@ivv.nasa.gov 304-367-8438

Pam Casto…Education Specialist

pam.casto@ivv.nasa.gov 304-367-8436

Amy Phillips...Graduate Assistant for Student Programs

amy.phillips@ivv.nasa.gov 304-367-8379

Josh Revels...ERC Intern / IV&V Librarian

josh.revels@ivv.nasa.gov 304-367-8251

Nicole Culp….ERC Intern / Equipment Loan

nicole.culp@ivv.nasa.gov

Links to Student Competitions

First Lego League Robotics:

http://www.firstlegoleague.org/

Real World Design Challenge:

http://www.realworlddesignchallenge.org/

Team America Rocketry Challenge:

http://rocketcontest.org/

Green Aviation Contests:

http://aero.larc.nasa.gov/competitions.htm

Where in WV is the ERC?

January Workshops in Red

January Equipment Loans in Blue

To schedule a workshop:

Contact the ERC by calling 304-367-8436 or emailing:

pamela.casto@ivv.nasa.gov or

amy.phillips@ivv.nasa.gov

To schedule equipment for loan: First, check the equipment loan calendar on the ERC website to see if the equipment is available for the dates desired. Then choose your dates (up to a two week loan period) and email Nicole Culp who will schedule the loan.

nicole.culp@ivv.nasa.gov

The NASA Independent Verification and Validation Program Educator Resource Center's goal is to serve teachers, informal educators, and pre-service teachers to enable them to reach their goals. Through a grant with Fairmont State University, the NASA IV&V Program ERC provides materials, equipment for loan, and professional development workshops for informal and formal educators both at the facility and around the state of West Virginia that reflect NASA's current research and technology.

Workshop Quote of the Month:

I am interested in attending more workshops because knowledge is power and these workshops provide a lot of knowledge!

Science Quote of the Month:

I am among those who think that science has great beauty. A scientist in his laboratory is not only a technician: he is also a child placed before natural phenomena which impress him like a fairy tale.

Marie Curie (1867 - 1934)